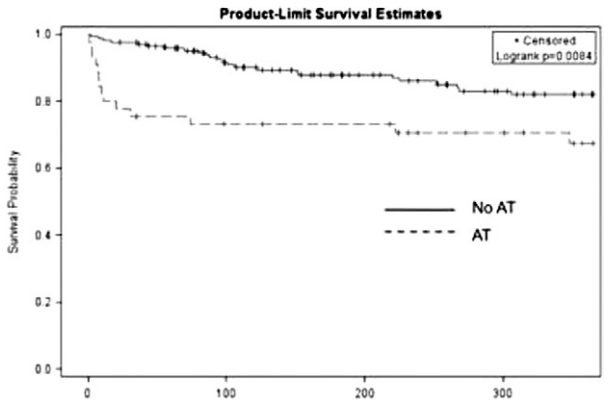

Conclusions: AT is frequent after TAVR and associated with major bleeding events and increased mortality. Larger studies are needed to confirm those results.

TCT-899

Risk of Respiratory Failure After Minimally Invasive Transapical Aortic Valve Implantation

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Background: Impaired respiratory function is believed to be a risk factor for transapical aortic valve implantation (TA-AVI). The purpose of this study was to investigate the incidence, predictors and impact of acute and chronic respiratory failure (ARF and CRF) on procedural success and outcome.
Methods: 350 consecutive 'high-risk' patients, age 81.8 ± 6.4 years, 66.3% female, were included during a 4-year period. Preoperative estimated FEV1 was 91.9 ± 33.6%. Mean logistic EuroSCORE was 31.0 ± 15.9% and mean STS-Score 12.0 ± 7.7%. An uni- and multivariate logistic regression analysis was performed.
Results: Regarding the postoperative respiratory outcome, ARF occurred in 14.9% and interstitial lung disease (OR = 23.40, p = 0.01), transfusion > 4 RBC units (OR = 15.35, p < 0.001), brief reactive psychosis (OR = 8.39, p = 0.001), age ≥ 80 yrs (OR = 3.66, p = 0.035) and vital capacity ≤ 60% (OR = 3.23, p = 0.025) were independent risk factors for this event. Postoperative re-intubation was required in 17.1%. Vital capacity ≤ 60% (OR = 2.94, p = 0.046) and transfusion > 4 RBC units (OR = 16.00, p < 0.001) were independent risk factors for CRF. Short-term and long-term survival was explicitly lower in the ARF, CRF and re-intubation groups (p < 0.001 each).
Conclusions: Interstitial lung disease, age ≥ 80 yrs and vital capacity ≤ 60% are preoperative risk factors for impaired respiratory outcome. Further studies will define if the same risk factors can be expected using a transfemoral approach.

TCT-900

High-degree Atrioventricular Block and Need for Permanent Pacemaker Implantation after Transcatheter and Surgical Aortic Valve Replacement.

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Background: To evaluate the incidence and predictors of high degree atrioventricular block (HDAVB) and permanent pacemaker implantation (PPM) following surgical aortic valve replacement (SAVR) and transcatheter aortic valve implantation (TAVI).
Methods: We analyzed clinical, electrocardiographic, echocardiographic and peri-procedural data from 336 patients (pts) without prior pacemaker who underwent TAVI with either CoreValve (n=130) or Edwards-Sapien (n=206) prostheses between 2007 and 2011 and from 210 elderly pts (>75 years) undergoing SAVR between 2005 and 2010 in our centre.
Results: Mean age was similar in TAVI:79.4±7.3 vs. SAVR:79.07±2.86 years (p=0.45). TAVI exhibited an higher risk profile (Log Euroscore 22.9±15.8% in TAVI vs. 13.1±11.8% in SAVR, p=0.0001). HDAVB occurred in 10% SAVR vs. 13.9% TAVI pts (p=0.2) with an higher resolution in SAVR (90.5%) and 2 pts (0.95%) implanted PPM. PPM implantation was higher in TAVI (n=51, 15.2%, p=0.001) mostly due to HDAVB (86.3%) and was lower in Edwards (6.7%) vs. CoreValve (23.1%) group (p=0.001). The main causes of PPM implantation were: 3rd AVB (40pts, 78.5%), 2nd AVB Mobitz 2 (2pts, 4%), symptomatic LBBB and 1st AVB (2pts, 4%), atrial fibrillation with a ventricular rate <40/min (3pts, 6%), QRS widening (1pt, 1.9%), LBBB with sinus bradycardia (2pts, 4%) and brady-tachy syndrome (1pt, 1.9%). The median time from TAVI to PPM was 2 days (IQR=0-12) and from SAVR was 13.5 days (IQR=12-15). On multivariable analysis, the predictors of HDAVB were pre-existing RBBB (OR:5.1 95% CI 1.9-16.5; p=0.005) and LAH (OR:3.9 95% CI 1.3-11.1, p=0.011) in SAVR, whereas ejection fraction below 35% (p=0.052), CoreValve prosthesis (p=0.001), post-dilatation (p=0.001) and RBBB at baseline (p=0.001) predicted HDAVB in TAVI. On only univariate analysis, the depth of valve implantation (p=0.001) and ratio between valve and annulus size (p=0.001) predicted HDAVB after TAVI.
Conclusions: The need for PPM following TAVI was higher than SAVR (13.1 vs. 0.95%). Pre-existing RBBB and LAH were risk factors for HDAVB after SAVR. The predictive factors for complete AVB and PPM in TAVI patients were pre-existing RBBB, lower ejection fraction, CoreValve prosthesis and valve postdilatation.

TCT-901

Improved Mitral Valve Performance After Transapical Aortic Valve Implantation

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Background: Concomitant mitral regurgitation (MR) is frequently present prior to transapical aortic valve implantation (TA-AVI). The aim was to study the impact of MR on outcome and the effect of TA-AVI on MR using the Edwards SAPIENTM prosthesis.
Methods: A total of 439 patients, age 81.5 ± 6.4 years, 64.0% female, unterwent TA-AVI between Feb/2006 and Aug/2011. Mean logistic EuroSCORE was 29.7 ± 15.7% and mean STS-Score 11.4% ± 7.6%. Outcome was assessed in patients with absent (9.8%), ≤ mild (58.5%), moderate (29.7%) and severe (2.0%) MR by pre- and postoperative echocardiography.
Results: Patients with moderate/severe MR versus ≤ mild MR had an increased in-hospital mortality (HR = 2.69, 95% CI 1.43-5.06, p=0.002), but a comparable 4-year survival (HR = 0.73, 95% CI 0.27-1.93, p = 0.520). During postoperative echocardiographic examination, there was an overall improvement in mitral incompetence (absent in 23.7%, mild in 58.6%, moderate in 17.7%, and severe in none). Independent multivariate predictor's of improved MR were a maximum trans-aortic gradient ≥ 50 mmHg (OR = 14.35, p = 0.02), preoperative vena contracta width of the mitral valve ≥ 5.0 mm (OR = 8.93, p = 0.004), left-ventricular posterior wall dimension ≥ 1.6 cm (OR = 7.19, p = 0.001) and LVEF ≥ 60% (OR = 4.92, p = 0.007).
Conclusions: Moderate/severe MR prior to TA-AVI is associated with an increased early, but a comparable late mortality. We observed an overall improved mitral valve performance possibly by reducing closure forces acting on the mitral valve.

TCT-902

Report from the Swedish TAVI register: Comparison of two valve types.

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Background: Registry data and recent a randomized trail have established the safety and efficacy of TAVR in high risk operable and non-operable patients. Due to differences between the two common valve types procedural results and outcome may differ. The web-based on-line Swedish TAVI register have since the beginning 2008 captured all implant procedures, 1 month and 1 year FU as well as it tracks mortality in 100% of patients.
Methods: TAVI-procedures were only performed in the seven university hospital with cardiac surgical backup. Three hospitals used the CoreValve and four the Edwards Sapien device, none used both. Mortality tracking was performed via the national population registry.
Results: From 2008-2010; 568 TAVI procedures were performed. The use of the two devices was similar until 2011 with an increase in CoreValve procedures 122 vs. 87 Sapien. Approximately an equal number of men and women have been treated with a mean age of 82. An increase in transfemoral procedures compared to other access routes is observed. In 2011 the logistic Euroscore was higher for the CoreValve (27.5) compared to the Sapien (25.0). Procedural results are presented in table 1.
Conclusions: From 2008 till 2011 the number of TAVI procedures shows a moderate increase. Logistic Euroscore remains unchanged. Stroke numbers are low and have decreased from 3 to 1.5 %. The 30 days and 1 year all-cause mortality rate is 6.4% and 14%. Besides the higher number of pacemaker implants in the CoreValve group no major differences were seen between the two devices. The final analysis of the data will be presented at the meeting.

POSTERS

Table 1: Results from the Swedish TAVI registry 2008-2011

	CoreValve		Sapien	
TAVI Sweden 2008-2011	n=313		n=252	
Access site	Transfemoral	Transsubclavian	Transfemoral	Transapical
	n= 291	n=22	n=93	n=159
Euroscore log	23.5		25.0	
Device Success %	97.8		95.8	
All cause mortality 30-days %	5.5		7.5	
All cause mortality 1-year %	13.3		17.0	
Myocardial infarction %	1.0		1.3	
Acute Kidney injury (2011 only) %	6.0		2.5	
Life-threatening bleeding %	5.1		12.1	
Major vascular bleeding %	10.2		6.4	
Major stroke %	2.1		1.9	
New permanent pacemaker %	16.4		5.7	
Fluoroscopy time mean minutes	29,2		22,0	
Contrast media mean ml	177,5		134,0	
Length of Hospital stay days	7,3		9,8	

TCT-903

Incidence and Predictors of Left Bundle Branch Block after Transcatheter Aortic Valve Implantation

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Background: To compare the incidence and clinical significance of new bundle branch block in patients undergoing transcatheter aortic valve implantation (TAVI) with the Medtronic CoreValve and Edwards-Sapien prosthesis.
Methods: We analyzed data from 336 patients (pts) with no prior pacemaker who underwent TAVI with CoreValve (n=130) or Edwards (n=206) prosthesis between 2007 and 2011 in our centre. We examined the 12-lead ECGs and documented the conduction disturbances after TAVI and before discharge as compared to baseline.
Results: Mean age was similar in CoreValve (79.4±7.3 years) vs. Edwards group (79.7±8.1 years, p=0.43). New onset of left bundle branch block (LBBB) was documented in 65 (19.3%) pts: 21 (32.2%) in Edwards vs. 44 (67.7%) in CoreValve pts (p=0.001). Of them 18 (27.7%) pts showed also a 1st atrioventricular block (AVB): 3 in Edwards and 16 in CoreValve pts (p=0.001). Permanent Pacemaker implantation (PPM) was required in 9 (13.8%) pts because of 3rd AVB (Edwards n=3; CoreValve n=4), LBBB and 1st AVB (CoreValve n=1) and LBBB with sinus bradycardia (CoreValve n=1). In 14 (21.5%) pts, LBBB was temporary (5 pts, 23.8% Edwards vs. 9pts, 20.4% CoreValve), whereas LBBB persisted in 61.9% of Edwards and in 65.9% of CoreValve pts (p=0.5) at discharge. On multivariable analysis, the predictors of LBBB were: CoreValve prosthesis (OR:5.3 95%-CI:2.9-9.8, p<0.001), and previous CABG (OR:1.9, 95%-CI:0.9-4, p<0.064). New onset of LBBB was not a predictor of overall (log rank p=0.56) and cardiovascular mortality (log rank p=0.61). A new onset of right bundle branch block (RBBB) was documented in 12 (3.6%) pts (6 both in Edwards and in CoreValve pts): 1.5% with left anterior hemiblock (LAH), 0.3% with 1st AVB and 0,6% with both LAH and 1st AVB. There were no statistically significant differences between Edwards and CoreValve prosthesis. 9 pts developed a new isolated 1st AVB.
Conclusions: New LBBB and RBBB are frequent intraventricular conduction disturbances after TAVI with a higher incidence in CoreValve prosthesis. In the majority of pts, the LBBB persists but is not a predictor of overall and cardiovascular mortality. These preliminary conclusions needs to be confirmed in a larger cohort of patients.

TCT-904

Catheter Laboratory Predictors Of Post Procedure Paraprosthetic Aortic Regurgitation Following Self-expanding Medtronic CoreValve Implantation: A Multicentre Registry Analysis

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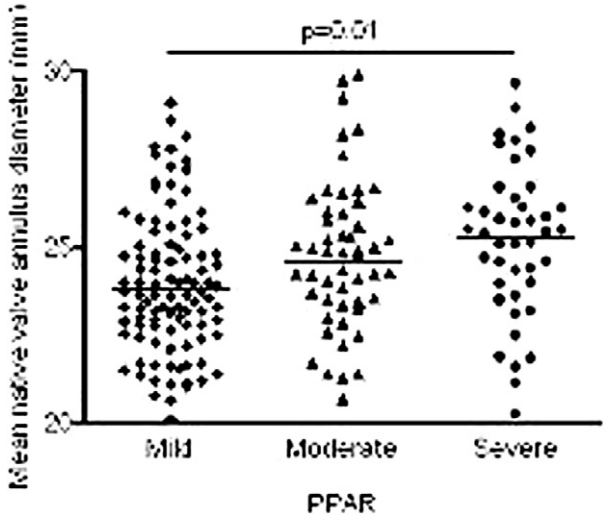
Background: The mechanisms of paraprosthetic aortic regurgitation (PPAR) in transcatheter valve intervention is related to patient and procedural factors. We studied the association of balloon valvuloplasty and implant depth with PPAR.
Methods: We conducted a multicenter analysis of 295 patients undergoing Medtronic CoreValve implantation with prior CT annular sizing. Significant PPAR was defined as moderate or severe angiographic regurgitation. Implant depth was measured as the mean distance from the nadir of the non- and left coronary sinuses to the distal valve frame angiographically. Pre-implantation nominal and achieved balloon size during valvuloplasty were recorded.
Results: The majority of patients had mild (35.5%), trivial (20.7%) or no (7.6%) PPAR with significant PPAR observed in 36% of patients. Significant PPAR was associated with a larger mean native annular diameter (p=0.01) and annulus to valve size ratio (p=0.03), Fig 1. Significant PPAR was also associated with increased depth of implantation (p=0.035). Although nominal balloon and native valve sizes were well matched, underexpanded balloon size was associated with significant PPAR (p=0.04). 13.7% of patients had post dilatation of the implant.
Conclusions: Significant paraprosthetic aortic regurgitation following Medtronic CoreValve implantation is associated with larger native valve dimensions and increased depth of implant. Adequacy of balloon valvuloplasty may also predict PPAR.



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